Fig. 1

(Equation 1)

$$y_0 = c_0 + c_1 x_1 + c_2 x_2 + \ldots c_n x_n$$

(Equation 2)

$$P = \frac{\exp(y)}{1 + \exp(y)}$$

(Equation 3)

$$\lambda(t) = \frac{f(t)}{1 - F(t)} = \frac{-S'(t)}{S(t)}$$

(Equation 4)

$$S(t) = \exp\left(-\int_0^t \lambda(u)du\right)$$

(Equation 5)

$$\lambda(t) = \int_x \lambda(t \mid x) p(x) dx$$

(Equation 6)

$$\lambda(t, x) = \lambda_0(t) \exp\left(\sum \beta_i x_i\right)$$

Fig. 2

- Mammogram — 50
- Computer Algorithm (Image-derived risk factors) — 40
- Patient History — 20
- Database of Risk Factors — 30
- STANDARD THRESHOLD — 60
- MODIFIED THRESHOLD — 70
- Risk Probability Model — 10
- Normal — 80
- Abnormal — 90
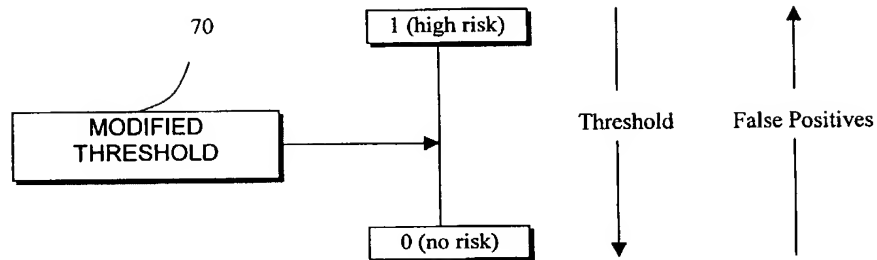- Initiate further examination — 100

Fig. 3

Detection Criteria Damped According to Risk

70

MODIFIED THRESHOLD

1 (high risk)

0 (no risk)

Threshold   False Positives

Fig. 4

Database of
Risk Factors

Age
Racial Background
Geographic Background
Hormonal Data
Breast Size
Weight And Height
Pregnancies
Breast Surgeries
Breast Water Content
Transverse Relaxation Time
Family Medical History
Previous Biopsies
Length Of Reproductive Years
Menopausal Status
Parity, Age Of Menarche
Age Of Menopause
Involution Characterization
Density Time Dependency
Density Dependent Texture
Dietary Factors
Physical Activity
Abnormality Spatial location